

Applicant: Peter BOEHLAND et al.
Docket No. R.305594
Preliminary Amdt.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-17. (Canceled)

18. (New) In a fuel injection device for an internal combustion engine, having at least two valve elements, each of which has a hydraulic control surface acting in the closing direction associated with a hydraulic control chamber, having a control valve that influences the pressure in the control chamber, and having loading devices that are able to act on the valve elements in the opening direction, in which the valve elements react at different hydraulic opening pressures prevailing in the control chamber, the improvement wherein the control valve is able to set at least three different pressure levels in the control chamber: wherein all of the valve elements are closed at a comparatively high pressure level; wherein one valve element is open at a medium pressure level; and wherein all of the valve elements are open at a comparatively low pressure level.

19. (New) The fuel injection device according to claim 18, wherein the control chamber is connected both to a high-pressure connection via an inlet throttle and the control valve is connected both to the control chamber and to a low-pressure connection.

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20. (New) The fuel injection device according to claim 19, wherein the control valve comprises a switching chamber with a switching element, which rests against a first valve seat leading to the low-pressure connection in a first switched position, rests against a second valve seat leading to a bypass conduit in a second switched position, in which position the bypass conduit is connected to the high-pressure connection, and does not rest against either the first valve seat or the second valve seat in a third switched position.

21. (New) The fuel injection device according to claim 20, wherein in the third switched position, the control valve constitutes a throttle that restricts the flow toward the low-pressure connection.

22. (New) The fuel injection device according to claim 18, wherein the control chamber is connected to the high-pressure connection, the control valve is connected to the control chamber via at least two control conduits, and wherein the control valve disconnects all of the control conduits from a low-pressure connection in a first switched position, connects one control conduit to the low-pressure connection in a second switched position, and connects all of the control conduits to the low-pressure connection in a third switched position.

23. (New) The fuel injection device according to claim 19, wherein the control chamber is connected to the high-pressure connection, the control valve is connected to the control chamber via at least two control conduits, and wherein the control valve disconnects all of the

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control conduits from a low-pressure connection in a first switched position, connects one control conduit to the low-pressure connection in a second switched position, and connects all of the control conduits to the low-pressure connection in a third switched position.

24. **(New)** The fuel injection device according to claim 19, wherein the control chamber is connected to a high-pressure connection, wherein the control valve connects the control chamber to a low-pressure connection in a first switched position and disconnects the control chamber from it in a second switched position, and wherein it is possible to continuously switch the control valve back and forth between the first switched position and the second switched position.

25. **(New)** The fuel injection device according to claim 24, wherein it is possible to trigger the control valve so that the continuous changing causes the pressure in the control chamber to fluctuate around a medium pressure level.

26. **(New)** The fuel injection device according to claim 24, wherein it is possible to trigger the control valve quickly so that the continuous changing yields a substantially constant, medium pressure level.

27. **(New)** The fuel injection device according to claim 18, wherein the valve elements are coaxial to each other and an axial boundary surface of the control chamber has a sealing

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region which, in an open end position of the outer valve element, subdivides the control chamber into an outer region connected to the high-pressure connection and an inner region connected to the control valve.

28. **(New)** The fuel injection device according to claim 19, wherein the valve elements are coaxial to each other and an axial boundary surface of the control chamber has a sealing region which, in an open end position of the outer valve element, subdivides the control chamber into an outer region connected to the high-pressure connection and an inner region connected to the control valve.

29. **(New)** The fuel injection device according to claim 18, wherein the control valve includes a piezoelectric actuator.

30. **(New)** The fuel injection device according to claim 19, wherein the control valve includes a piezoelectric actuator.

31. **(New)** The fuel injection device according to claim 29, wherein the control valve includes a valve body that is hydraulically coupled to the piezoelectric actuator; and wherein leakage fuel emerging from a guide of at least one valve element is used as the hydraulic fluid.

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32. **(New)** The fuel injection device according to claim 18, further comprising a catch on one valve element that acts on the other valve element in the opening direction.

33. **(New)** The fuel injection device according to claim 32, wherein the catch is embodied so that it strikes the other valve element shortly before the one valve element reaches its maximum stroke.

34. **(New)** The fuel injection device according to claim 32, wherein the loading device acting in the opening direction of the other valve element and the hydraulic control surface of the other valve element are matched to each other so that this valve element opens only if the catch of the one valve element exerts an additional force acting in the opening direction.

35. **(New)** A method for operating a fuel injection device according to claim 18, the method comprising the steps of first connecting the control chamber to a low-pressure connection and then, simultaneously connecting the control chamber to the low-pressure connection and a high-pressure connection in order to open only one valve element.

36. **(New)** A method for operating a fuel injection device according to claim 18, the method comprising the steps of first connecting the control chamber to the low-pressure connection and then, additionally connecting the control chamber to the high-pressure connection in order to open only one valve element.

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37. (New) A method for operating a fuel injection device according to claim 24, the method comprising closing the relay valve shortly before the pressure in the control chamber has fallen far enough for the inner valve element to open, and opening the relay valve again shortly before the outer valve element closes.